

IN THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application. An identifier indicating the status of each claim is provided.

Listing of Claims:

1. (Currently Amended) An apparatus for stimulating a plurality of muscles of a subject, comprising:

 a signal generator for generating an electrical pulse signal in accordance with one or more predetermined parameters for stimulating the muscles by inducing ~~contractions~~vibrations therein;

 an electrode apparatus for applying the signal to nerves associated with the muscles of the subject to be stimulated and for stimulating the muscles;

 wherein the predetermined parameters of the electrical pulse signal are selected ~~so as to induce a shivering phenomenon therein, which increases the subject's calorie consumption to at least about three times its resting metabolic rate~~ to cause a predetermined cardiac output of at least 50% of the maximum cardiac output of the subject;

 a monitor for monitoring the cardiovascular response of the subject; and

 a feedback mechanism ~~for~~ that maintains the predetermined cardiac output by controlling said signal generator based upon the ~~cardio-vascular~~cardiovascular response.

2. (Currently Amended) The apparatus of claim 1, wherein the electrical pulse signal induces ~~contractions~~vibrations in the muscle within a range of 3Hz to 12Hz.

3. (Currently Amended) The apparatus of claim 2, wherein the electrical pulse signal for induces ~~contractions~~vibrations in the muscle within a range of 4Hz to 8Hz.
4. (Currently Amended) The apparatus of claim 1, wherein the parameters are selected so that said ~~shivering phenomenon~~predetermined cardiac output burns calories in the muscles of the subject ~~and wherein said shivering burns calories without doing work on a load external to the subject.~~
5. (Currently Amended) The apparatus of claim 1, wherein the parameters are selected so that a cardiovascular response is generated in response to the ~~induced shivering phenomenon~~predetermined cardiac output.
6. (Original) The apparatus of claim 5, wherein said cardiovascular response is greater than 50% maximum cardiac output.
7. (Original) The apparatus of claim 5, wherein said cardiovascular response is greater than 60%-70% maximum cardiac output.
8. (Original) The apparatus of claim 1, wherein the predetermined parameters of the electrical pulse signal generated by the signal generator are selected to minimize discomfort to the subject.

9. (Currently Amended) The apparatus of claim 1, wherein the electrical pulse signal comprises a plurality of single pulses at a frequency for inducing the ~~contractions~~vibrations in the muscle of the subject within a predetermined frequency range.

10. (Currently Amended) The apparatus of claim 9, wherein said frequency range of the ~~contractions~~vibrations induced in the muscle of the subject is from 3Hz to 12Hz.

11. (Withdrawn) The apparatus of claim 10, wherein the predetermined parameters of the pulses within each burst of pulses are selected such as to avoid contractions of the muscle at frequencies above 12Hz.

12. (Withdrawn) The apparatus of claim 1, wherein the electrical pulse signal comprises a plurality of bursts of pulses, the frequency of the respective bursts of pulses being such as to induce contractions in the muscle of the subject within a predetermined frequency range.

13. (Withdrawn) The apparatus of claim 12, wherein the said frequency range of the contractions induced in the muscle of the subject is from 3Hz to 12 Hz.

14. (Withdrawn) The apparatus of claim 13, wherein the predetermined parameters of the pulses within each burst of pulses are selected such as to avoid contractions of the muscle at frequencies above 12Hz.

15. (Previously Presented) The apparatus of claim 1, wherein a charge-per-pulse of one or more pulses of the electrical pulse signal, and the electrode apparatus for applying the pulse signal to the subject co-operate with each other to maintain the charge-per-pulse per unit area of the applied electrical pulse signal at or below 16 nC/mm^2 in the subject.
16. (Original) The apparatus of claim 15, wherein the current density is maintained at or below 0.1 mA/mm^2 .
17. (Original) The apparatus of claim 1, wherein a maximum charge-per-pulse of the electrical pulse signal exceeds approximately 60 mC.
18. (Original) The apparatus of claim 1, wherein the electrode apparatus for applying the pulse signal to the subject comprises an electrode.
19. (Original) The apparatus of claim 1, wherein the electrode apparatus for applying the pulse signal to the subject comprises a plurality of electrodes.
20. (Original) The apparatus of claim 19, wherein the effective electrically conductive contact area of at least one electrode is not less than $7,500 \text{ mm}^2$.
21. (Original) The apparatus of claim 20, wherein the effective electrically conductive contact area of at least one electrode is not less than $10,000 \text{ mm}^2$.

22. (Original) The apparatus of claim 21, wherein the effective electrically conductive contact area of at least one electrode is not less than 15,000 mm².

23. (Original) The apparatus of claim 19, wherein at least one of the electrodes has an effective electrical contact area such that the length of the effective electrical contact area is substantially similar to the width of the muscle to be stimulated.

24. (Previously Presented) The apparatus of claim 23, wherein when it is desired to stimulate a quadricep or hamstring muscle group in a male of average size, the length of the effective electrical contact area of the relevant electrode is at least 140 mm.

25. (Previously Presented) The apparatus of claim 24, wherein when it is desired to stimulate a quadricep or hamstring muscle group in a male of average size, the length of the effective electrical contact area of the relevant electrode is at least 190 mm.

26. (Previously Presented) The apparatus of claim 19, wherein at least one of the electrodes has an effective electrical contact area such that a maximum charge may be applied to the muscles of the subject while minimizing discomfort to the subject.

27. (Currently Amended) An apparatus for stimulating a plurality of muscles of a subject, comprising:

a signal generator for generating an electrical pulse signal in accordance with one or more predetermined parameters for stimulating the muscles by inducing ~~contractions~~vibrations therein; and

an electrode apparatus for applying the signal to nerves associated with the muscles of the subject to be stimulated for stimulating the muscle;

wherein the predetermined parameters of the electrical pulse signal are selected ~~so as to induce a shivering phenomenon therein, which increases the subjects calorie consumption to at least about three times its resting metabolic rate~~ to cause a predetermined cardiac output of at least 50% of the maximum cardiac output of the subject;

a monitor for monitoring the cardiovascular response of the subject;

a feedback mechanism ~~for that maintains the predetermined cardiac output by controlling~~ said signal generator based upon the ~~cardio-vascular~~cardiovascular response; and

wherein the pulse signal comprises a plurality of single pulses, and the frequency of the respective pulses lies in the range 4Hz to 12Hz.

28. (Original) The apparatus of claim 27 wherein the pulse signal comprises a plurality of single pulses, and the frequency of the respective pulses lies in the range of 4Hz to 8Hz.

29. (Original) The apparatus of claim 27, wherein at least two of said plurality of single pulses are of different amplitudes.

30. (Withdrawn) An apparatus for stimulating a muscle of a subject, comprising:

a signal generator for generating an electrical pulse signal in accordance with one or more predetermined parameters for stimulating the muscle by inducing contractions therein; and

an electrode apparatus for applying the signal to nerves associated with the muscle of the subject to be stimulated for stimulating the muscle;

wherein the predetermined parameters of the electrical pulse signal are selected so as to maximize the bulk of the muscle being subjected to the contractions so as to induce a shivering phenomenon therein; and

wherein the pulse signal comprises a plurality of bursts.

31. (Withdrawn) The apparatus of claim 30, wherein the frequency of the bursts lie in the range of 3Hz to 12Hz.

32. (Withdrawn) The apparatus of claim 31, wherein the frequency of the bursts lie in the range 4Hz to 8Hz.

33. (Withdrawn) The apparatus of claim 30, wherein the frequency of the pulses within each burst of pulses is greater than 20 Hz.

34. (Withdrawn) The apparatus of claim 30, wherein the current amplitude of respective pulses within each burst are within an envelope which defines a curve which rises from a first lower current amplitude value to a peak current amplitude value, and then returns to a second lower amplitude value.

35. (Withdrawn) The apparatus of claim 34, wherein the first and second lower current amplitude values are substantially similar.
36. (Withdrawn) The apparatus of claim 34, wherein two adjacent pulse signals of each burst of pulse signals adjacent to the peak amplitude value of the envelope are of a substantially similar current amplitude value.
37. (Withdrawn) The apparatus of claim 34, wherein the first and second lower amplitude values of a particular burst do not exceed more than approximately 60% of the peak amplitude value of the particular burst.
38. (Withdrawn) The apparatus of claim 30, wherein where each burst of pulses comprises two or more pulses, the respective pulses in the burst of pulses may be of similar or different current amplitude values.
39. (Withdrawn) The apparatus of claims 30, wherein each pulse burst comprises two pulses.
40. (Withdrawn) The apparatus of claim 39, wherein an amplitude of one of said two pulses does not exceed more than approximately 60% of the amplitude of the second pulse of said two pulses.

41. (Withdrawn) The apparatus of claim 39, wherein a charge of one or said two pulses does not exceed more than approximately 60% of the charge of the second pulse of said two pulses.

42. (Currently Amended) An apparatus for stimulating a muscle of a subject, comprising:

 a signal generator for generating an electrical pulse signal; and

 an electrode apparatus for applying the signal to the muscle of a subject to induce vibrations therein;

 wherein one or more predetermined parameters of the electrical pulse signal are selected ~~so as to maximize the bulk of the muscle being subjected to the contractions so as to~~ electrical pulse signal to induce a shivering phenomenon vibrations therein for inducing cardiovascular training effects in the subject ~~the shivering, and increasing the subjects calorie consumption to at least about three times its resting metabolic rates~~ subject's cardiac output to cause a predetermined level of at least 50% of the maximum cardiac output of the subject; and

 a monitor for monitoring the cardiovascular response of the subject.

43. (Previously Presented) The apparatus of claim 42, wherein the parameters are selected so that said cardiovascular training induces significant calorie usage in the subject.

44. (Previously Presented) The apparatus of claim 42, wherein the parameters are selected so that said cardiovascular training induces one or more benefits of aerobic exercise in the subject.

45. (Withdrawn) An apparatus for stimulating a muscle of a subject, comprising:
- a signal generator for generating an electrical pulse signal in accordance with one or more predetermined parameters for stimulating the muscle by inducing contractions therein; and
- an electrode apparatus for applying the signal to nerves associated with the muscle of the subject to be stimulated for stimulating the muscle;
- wherein the predetermined parameters of the electrical pulse signal are selected so as to maximize the bulk of the muscle being subjected to the contractions so as to induce a shivering phenomenon therein; and
- wherein said electrode apparatus is provided in a garment.
46. (Withdrawn) The apparatus of claim 45, wherein said electrode apparatus is fixed to an internal surface of said garment as to contact the skin of a subject when in use.
47. (Withdrawn) The apparatus of claim 46, wherein said garment applies a force to said electrode apparatus, thereby compressing the electrode apparatus against the skin.
48. (Withdrawn) The apparatus of claim 46, wherein said garment includes a banding system for applying a force to said electrode apparatus, therefore compressing the electrode apparatus against the skin.
49. (Withdrawn) The apparatus of claim 45, wherein said electrode apparatus exerts a pressure on said skin.

50. (Withdrawn) The apparatus of claim 49, wherein said pressure is maximized without discomfort to the subject.

51. (Withdrawn) The apparatus of claim 50, wherein said pressure is approximately 40 mm Hg.

52. (Withdrawn) The apparatus of claim 45, wherein said cardiovascular training induces one or more benefits of aerobic exercise in the subject.

53. (Withdrawn) An apparatus for stimulating a muscle of a subject, comprising:
 a signal generator for generating an electrical pulse signal in accordance with one or more predetermined parameters for stimulating the muscle by inducing contractions therein; and
 an electrode apparatus for applying the signal to nerves associated with the muscle of the subject to be stimulated for stimulating the muscle;
 wherein the predetermined parameters of the electrical pulse signal are selected so as to maximize the bulk of the muscle being subjected to the contractions so as to induce a shivering phenomenon therein; and
 wherein an amplitude of said electrical pulse signal is selected at a level to allow normal sleep of a subject during use.

54. (Withdrawn) The apparatus of claim 53, wherein said amplitude of said pulse signal is varied in accordance with a determined sleep depth of the subject.

55. (Withdrawn) The apparatus of claim 53, wherein said amplitude of said pulse signal is varied in accordance with a predetermined timing sequence.

56. (Currently Amended) An apparatus for stimulating a muscle of a subject, comprising:

 a signal generator for generating an electrical pulse signal in accordance with one more predetermined parameters for stimulating the muscle by inducing ~~contractions~~vibrations therein;

 an electrode apparatus for applying the signal to nerves associated with the muscle of the subject to be stimulated for stimulating the muscle;

 a monitor for monitoring one or more physiological parameters of a subject; and
a feedback mechanism for controlling said signal generator based upon an output of said monitor;

 wherein the predetermined parameters of the electrical pulse signal are selected so as to induce a ~~shivering phenomenon therein the shivering increasing the subjects calorie consumption to at least about three times its resting metabolic rate~~muscle vibrations sufficient to cause a predetermined cardiac output of at least 50% of the maximum cardiac output of the subject.

57. (Original) The apparatus of claim 56, wherein said monitor comprises a heart rate monitor, said feedback mechanism varying said predetermined parameters of said electrical pulse based upon a heart rate of said subject.

58. (Withdrawn) The apparatus of claim 56, wherein said monitor calculates calorie expenditure by the subject, said feedback mechanism controlling said apparatus in accordance with said calculated calorie expenditure.

59. (Withdrawn) The apparatus of claim 56, wherein said monitor comprises an accelerometer, said accelerometer being positioned adjacent said muscle and measuring a magnitude of said shivering, said feedback mechanism controlling said apparatus in accordance with a measured magnitude of said shivering.

60. (Withdrawn) An apparatus for stimulating muscles of a subject, comprising:
 a signal generator for generating an electrical pulse signal in accordance with one or more predetermined parameters for stimulating the muscles by inducing contractions therein; and
 an electrode apparatus for applying the signal to nerves associated with the muscles of the subject to be stimulated for stimulating the muscles;
 wherein the predetermined parameters of the electrical pulse signal are selected so as to maximize the bulk of the muscles being subjected to the contractions so as to induce a shivering phenomenon therein; and
 wherein said electrode apparatus comprises a plurality of electrodes.

61. (Withdrawn) The apparatus of claim 60, wherein said electrical pulse signal is transmitted between two of said plurality of electrodes placed on a single limb of said subject.

62. (Withdrawn) The apparatus of claim 60, wherein said electrical pulse signal is transmitted between two of said plurality of electrodes placed on different limbs of said subject.

63. (Withdrawn) The apparatus of claim 60, wherein said electrical pulse signal is transmitted between a combination of said plurality of electrodes placed on a single limb of said subject.

64. (Withdrawn) The apparatus of claim 63, wherein said electrical pulse signal is selectively transmitted between predetermined combinations of said plurality of electrodes in order to preferentially stimulate different muscles of said subject.

65. (Withdrawn) The apparatus of claim 60, wherein said electrical pulse signal is transmitted between a combination of said plurality of electrodes placed on different limbs of said subject.

66. (Withdrawn) The apparatus of claim 65, wherein said electrical pulse signal is selectively transmitted between predetermined combinations of said plurality of electrodes in order to preferentially stimulate different muscles of said subject.

67. (Currently Amended) A method for stimulating a plurality of muscles of a subject, comprising the steps of:

generating an electrical pulse signal in accordance with one or more predetermined parameters for stimulating the muscles by inducing ~~contractions~~ vibrations therein;

applying the signal to nerves associated with the muscles of the subject to be stimulated;
and

selecting the predetermined parameters of the electrical pulse signal ~~so as to induce a shivering phenomenon therein the shivering increasing the subjects calorie consumption to at least about three times its resting metabolic rate~~ to cause a predetermined cardiac output of at least 50% of the maximum cardiac output of the subject;

monitoring the cardiovascular response of the subject; and

maintaining the predetermined cardiac output by controlling said signal generator based upon the ~~cardio-vascular~~cardiovascular response.

68. (Currently Amended) The method of claim 67, wherein the electrical pulse signal induces ~~contractions~~vibrations in the muscle within a range of 3Hz to 12Hz.

69. (Currently Amended) The method of claim 68, wherein the electrical pulse signal for induces ~~contractions~~vibrations in the muscle within a range of 4Hz to 8Hz.

70. (Currently Amended) The method of claim 67, wherein said ~~shivering phenomenon~~predetermined cardiac output burns calories in the muscles of the subject without performing any external work by the subject.

71. (Currently Amended) The method of claim 67, wherein a cardiovascular response is generated in response to the induced ~~shivering phenomenon~~vibrations.

72. (Original) The method of claim 71, wherein said cardiovascular response is greater than 50% maximum cardiac output.

73. (Original) The method of claim 71, wherein said cardiovascular response is greater than 60%-70% maximum cardiac output.

74. (Original) The method of claim 67, further comprising the step of selecting the predetermined parameters of the electrical pulse signal generated by the signal generator to minimize discomfort to the subject.

75. (Currently Amended) The method of claim 67, wherein the electrical pulse signal comprises a plurality of single pulses at a frequency for inducing the ~~contractions~~vibrations in the muscles of the subject within a predetermined frequency range.

76. (Currently Amended) The method of claim 75, wherein said frequency range of the ~~contractions~~vibrations induced in the muscles of the subject is from 3Hz to 12Hz.

77. (Withdrawn) The method of claim 76, wherein the predetermined parameters of the pulses within each burst of pulses are selected such as to avoid contractions of the muscle at frequencies above 12Hz.

78. (Withdrawn) The method of claim 67, wherein the electrical pulse signal comprises a plurality of bursts of pulses, the frequency of the respective bursts of pulses being

such as to induce contractions in the muscle of the subject within a predetermined frequency range.

79. (Withdrawn) The method of claim 78, wherein the said frequency range of the contractions induced in the muscle of the subject is from 3Hz to 12 Hz.

80. (Withdrawn) The method of claim 79, further comprising the step of selecting the predetermined parameters of the pulses within each burst of pulses such as to avoid contractions of the muscle at frequencies above 12Hz.

81. (Previously Presented) The method of claim 67, wherein a charge-per-pulse of one or more pulses of the electrical pulse signal, and the electrode apparatus for applying the pulse signal to the subject co-operate with each other to maintain the charge-per-pulse per unit area of the applied electrical pulse signal at or below 16nC/mm^2 in the subject.

82. (Original) The method of claim 81, wherein the current density is maintained at or below 0.1 mA/mm^2 .

83. (Original) The method of claim 67, wherein a maximum charge-per-pulse of the electrical pulse signal exceeds approximately 60 mC.

84. (Original) The method of claim 67, wherein the pulse signal is applied to the subject by an electrode.

85. (Original) The method of claim 67, wherein the pulse signal is applied to the subject by a plurality of electrodes.

86. (Original) The method of claim 85, wherein the effective electrically conductive contact area of at least one electrode is not less than 7,500 mm².

87. (Original) The method of claim 86, wherein the effective electrically conductive contact area of at least one electrode is not less than 10,000 mm².

88. (Original) The method of claim 87, wherein the effective electrically conductive contact area of at least one electrode is not less than 15,000 mm².

89. (Original) The method of claim 85, wherein at least one of the electrodes has an effective electrical contact area such that the length of the effective electrical contact area is substantially similar to the width of the muscle to be stimulated.

90. (Previously Presented) The method of claim 89, wherein when it is desired to stimulate a quadricep or hamstring muscle group in a male of average size, the length of the effective electrical contact area of the relevant electrode is at least 140 mm.

91. (Previously Presented) The method of claim 90, wherein when it is desired to stimulate a quadricep or hamstring muscle group in a male of average size, the length of the effective electrical contact area of the relevant electrode is at least 190 mm.

92. (Previously Presented) The method of claim 85, wherein at least one of the electrodes has an effective electrical contact area such that a maximum charge may be applied to the muscles of the subject while minimizing discomfort to the subject.

93. (Currently Amended) A method for stimulating a muscle of a subject, comprising the steps of:

generating an electrical pulse signal in accordance with one or more predetermined parameters for stimulating the muscle by inducing ~~contractions~~vibrations therein;

applying the signal to nerves associated with the muscle of the subject to be stimulated for stimulating the muscle;

selecting the predetermined parameters of the electrical pulse signal ~~so as to induce a shivering phenomenon therein the shivering increasing the subjects calorie consumption to at least about three times its resting metabolic rate~~ to cause a predetermined cardiac output of at least 50% of the maximum cardiac output of the subject;

monitoring the cardiovascular response of the subject; and

maintaining the predetermined cardiac output by controlling said signal based upon the ~~cardio-vascular~~cardiovascular response;

wherein the pulse signal comprises a plurality of single pulses, and the frequency of the respective pulses lies in the range 4Hz to 12Hz.

94. (Original) The method of claim 93, wherein the pulse signal comprises a plurality of single pulses, and the frequency of the respective pulses lies in the range of 4Hz to 8Hz.

95. (Original) The method of claim 93, wherein at least two of said plurality of single pulses are of different amplitudes.

96. (Withdrawn) A method for stimulating a muscle of a subject, comprising the steps of:

 generating an electrical pulse signal in accordance with one or more predetermined parameters for stimulating the muscle by inducing contractions therein;

 applying the signal to nerves associated with the muscle of the subject to be stimulated for stimulating the muscle;

 selecting the predetermined parameters of the electrical pulse signal so as to maximize the bulk of the muscle being subjected to the contractions so as to induce a shivering phenomenon therein;

 wherein the pulse signal comprises a plurality of bursts.

97. (Withdrawn) The method of claim 96, wherein the frequency of the bursts lie in the range of 3Hz to 12Hz.

98. (Withdrawn) The method of claim 97, wherein the frequency of the bursts lie in the range 4Hz to 8Hz.

99. (Withdrawn) The method of claim 96, wherein the frequency of the pulses within each burst of pulses is greater than 20 Hz.

100. (Withdrawn) The method of claim 96, wherein the current amplitude of respective pulses within each burst are within an envelope which defines a curve which rises from a first lower current amplitude value to a peak current amplitude value, and then returns to a second lower amplitude value.

101. (Withdrawn) The method of claim 100, wherein the first and second lower current amplitude values are substantially similar.

102. (Withdrawn) The method of claim 100, wherein two adjacent pulse signals of each burst of pulse signals adjacent to the peak amplitude value of the envelope are of a substantially similar current amplitude value.

103. (Withdrawn) The method of claim 100, wherein the first and second lower amplitude values of a particular burst do not exceed more than approximately 60% of the peak amplitude value of the particular burst.

104. (Withdrawn) The method of claim 96, wherein where each burst of pulses comprises two or more pulses, the respective pulses in the burst of pulses may be of similar or different current amplitude values.

105. (Withdrawn) The method of claims 96, wherein each pulse burst comprises two pulses.

106. (Withdrawn) The method of claim 105, wherein an amplitude of one of said two pulses does not exceed more than approximately 60% of the amplitude of the second pulse of said two pulses.

107. (Withdrawn) The method of claim 105, wherein a charge of one or said two pulses does not exceed more than approximately 60% of the charge of the second pulse of said two pulses.

108. (Currently Amended) A method for stimulating a muscle of a subject, comprising the steps of:

generating an electrical pulse signal;

applying the signal to the muscle of a subject to induce vibrations therein; and

selecting one or more predetermined parameters of the electrical pulse signal ~~so as to~~ maximize the bulk of the muscle being subjected to the ~~contractions~~ vibrations ~~so as to induce a shivering phenomenon therein for inducing cardiovascular training effects in the subject, the shivering increasing the subjects calorie consumption to at least about three times its resting metabolic rate~~ and cause a predetermined cardiac output of at least 50% of the maximum cardiac output of the subject;

monitoring the cardiovascular response of the subject; and

maintaining the predetermined cardiac output by controlling said signal based upon the
~~cardio-vascular~~cardiovascular response.

109. (Original) The method of claim 108, wherein said cardiovascular training induces relatively significant calorie usage in the subject.

110. (Original) The method of claim 108, wherein said cardiovascular training induces one or more benefits of aerobic exercise in the subject.

111. (Withdrawn) A method for stimulating a muscle of a subject, comprising the steps of:

 generating an electrical pulse signal in accordance with one or more predetermined parameters for stimulating the muscle by inducing contractions therein;

 applying the signal to nerves associated with the muscle of the subject to be stimulated for stimulating the muscle;

 selecting the predetermined parameters of the electrical pulse signal so as to maximize the bulk of the muscle being subjected to the contractions so as to induce a shivering phenomenon therein;

 wherein an electrode apparatus for applying said signal is provided in a garment.

112. (Withdrawn) The method of claim 111, further comprising the steps of fixing said electrode apparatus to an internal surface of said garment as to contact the skin of a subject when in use.

113. (Withdrawn) The method of claim 112, wherein said garment applies a force to said electrode apparatus, thereby compressing the electrode apparatus against the skin.

114. (Withdrawn) The method of claim 112, wherein said garment includes a banding system for applying a force to said electrode apparatus, therefore compressing the electrode apparatus against the skin.

115. (Withdrawn) The method of claim 111, wherein said electrode apparatus exerts a pressure on said skin.

116. (Withdrawn) The method of claim 115, wherein said pressure is maximized without discomfort to the subject.

117. (Withdrawn) The method of claim 116, wherein said pressure is approximately 40 mm Hg.

118. (Withdrawn) The method of claim 111, wherein said cardiovascular training induces one or more benefits of aerobic exercise in the subject.

119. (Withdrawn) A method for stimulating a muscle of a subject, comprising the steps of:

generating an electrical pulse signal in accordance with one or more predetermined parameters for stimulating the muscle by inducing contractions therein;

applying the signal to nerves associated with the muscle of the subject to be stimulated for stimulating the muscle;

selecting the predetermined parameters of the electrical pulse signal so as to maximize the bulk of the muscle being subjected to the contractions so as to induce a shivering phenomenon therein; and

selecting an amplitude of said electrical pulse signal is selected at a level to allow normal sleep of a subject during use.

120. (Withdrawn) The method of claim 119, further comprising the step of varying said amplitude of said pulse signal in accordance with a determined sleep depth of the subject.

121. (Withdrawn) The method of claim 119, further comprising the step of varying said amplitude of said pulse signal in accordance with a predetermined timing sequence.

122. (Currently Amended) A method for stimulating a muscle of a subject, comprising the steps of:

generating an electrical pulse signal in accordance with one more predetermined parameters for stimulating the muscle by inducing ~~contractions~~vibrations therein;

applying the signal to nerves associated with the muscle of the subject to be stimulated for stimulating the muscle;

monitoring one or more physiological parameters of a subject;

maintaining a predetermined cardiac output by controlling said signal generator based upon an output of said monitoring; and

selecting the predetermined parameters of the electrical pulse signal ~~so as to induce a shivering phenomenon therein the shivering increasing, the subjects calorie consumption to at least about three times its resting metabolic rate~~ the predetermined cardiac output of at least 50% of the maximum cardiac output of the subject.

123. (Original) The method of claim 122, wherein said monitoring is performed by a heart rate monitor, and said predetermined parameters of said electrical pulse are varied based upon a heart rate of said subject.

124. (Withdrawn) The method of claim 122, wherein said monitoring is performed calculating calorie expenditure by the subject, and said muscle is stimulated in accordance with said calculated calorie expenditure.

125. (Withdrawn) The method of claim 122, wherein said monitoring is performed by an accelerometer, said accelerometer being positioned adjacent said muscle and measuring a magnitude of said shivering, and said muscle is stimulated in accordance with a measured magnitude of said shivering.

126. (Withdrawn) A method for stimulating muscles of a subject, comprising the steps of:

generating an electrical pulse signal in accordance with one or more predetermined parameters for stimulating the muscles by inducing contractions therein; and

applying the signal to nerves associated with the muscles of the subject to be stimulated for stimulating the muscles; and

selecting the predetermined parameters of the electrical pulse signal are selected so as to maximize the bulk of the muscles being subjected to the contractions so as to induce a shivering phenomenon therein;

wherein said signal is applied by a plurality of electrodes.

127. (Withdrawn) The method of claim 126, further comprising the step of transmitting said electrical pulse signal between two of said plurality of electrodes placed on a single limb of said subject.

128. (Withdrawn) The method of claim 126, further comprising the step of transmitting said electrical pulse signal between two of said plurality of electrodes placed on different limbs of said subject.

129. (Withdrawn) The method of claim 126, further comprising the step of transmitting said electrical pulse signal between a combination of said plurality of electrodes placed on a single limb of said subject.

130. (Withdrawn) The method of claim 129, further comprising the step of selectively transmitting said electrical pulse signal between predetermined combinations of said plurality of electrodes in order to preferentially stimulate different muscles of said subject.

131. (Withdrawn) The method of claim 126, further comprising the step of transmitting said electrical pulse signal between a combination of said plurality of electrodes placed on different limbs of said subject.

132. (Withdrawn) The method of claim 131, further comprising the step of selectively transmitting said electrical pulse signal between predetermined combinations of said plurality of electrodes in order to preferentially stimulate different muscles of said subject.

133. (New) A method of stimulating muscles in a subject, comprising:
generating an electrical pulse signal;
applying the signal to nerves associated with muscles of the subject to be stimulated;
inducing muscle vibrations in a predetermined frequency range by selecting parameters of the electrical pulse signal;
maintaining the muscle vibrations in the predetermined frequency range to cause a cardiac output of at least 50% of the maximum cardiac output of the subject.

134. (New) The method of stimulating muscles according to claim 133, wherein the predetermined frequency range is from 3 Hertz to 12 Hertz.

135. (New) An apparatus for stimulating a plurality of muscles of a subject, comprising:

an electrode apparatus for applying an electrical signal to nerves associated with the muscles of the subject;

a signal generator for providing an electrical signal to the electrode apparatus to induce muscle vibrations in a predetermined frequency range that cause a predetermined cardiac output of at least 50% of the maximum cardiac output of the subject;

a monitor for monitoring the cardiovascular response of the subject; and

a feedback mechanism that maintains the predetermined cardiac output by controlling said signal generator based upon the cardio vascular response,

wherein the predetermined frequency range of the muscle vibrations is determined by selecting parameters of the electrical signal.

136. (New) The apparatus for stimulating a plurality of muscles according to claim 135, wherein the predetermined frequency range is from 3 Hertz to 12 Hertz.